application. Independent claims 1, 8, and 12 have been amended. No new matter has been added to the application. No fee for additional claims is due by way of this Amendment. The Commissioner is authorized to charge any fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

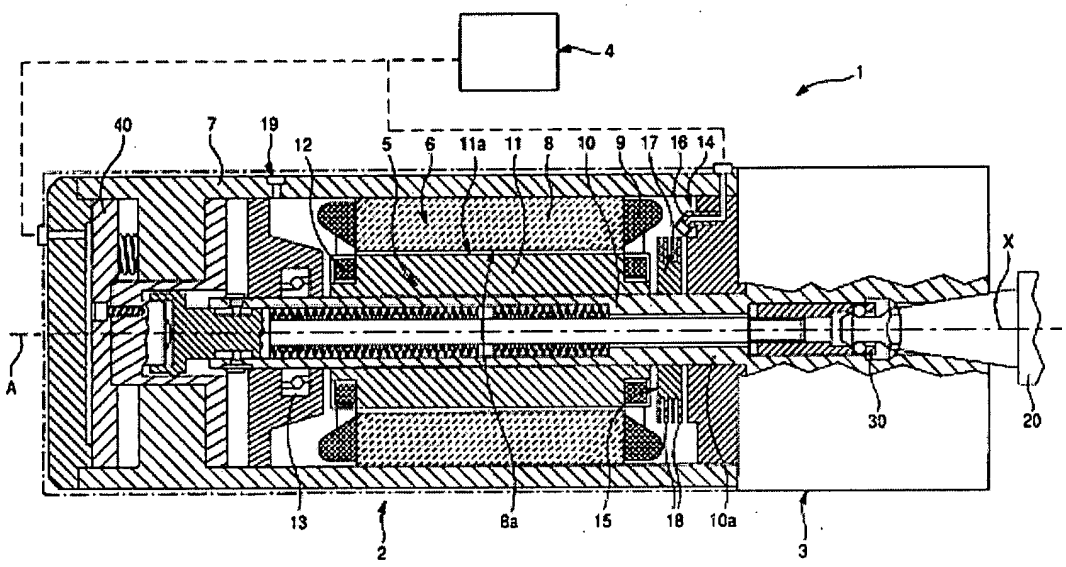
I. 35 U.S.C. § 102 Rejections Based on the Selci '274 Patent

Claims 1-18 were rejected under 35 U.S.C. § 102(b) as being anticipated by Selci (U.S. Patent No. 6,144,123). *Examiner's Office Action* p. 2 (10 Dec. 2002).

Selci is directed to an electric chuck. The "object of the [Selci] invention is that [sic] providing an electric chuck with a cooling system for the electric motor which permits a better cooling of the rotor, therefore permitting the electric motor to deliver a greater power for the same dimensions." *Selci '123 Patent*, col. 1, lines 45-50. In the Selci invention "there is provided an electric chuck comprising an electric motor provided with a stator, a rotor mounted rotatably within the stator about a first axis of rotation, and an outer casing housing the stator and the rotor within its interior; the electric chuck being characterised in that the said electric motor includes rotor cooling means housed within the said casing." *Id.* at col. 1, lines 51-56.

Fig. 1 of Selci is instructive:

Fig. 1



> With reference to the attached figure [Fig. 1], the electric motor 2 finally includes a **cooling device 14 for dissipating heat produced by the rotor 5 and the stator 6 during operation**. This **cooling device 14** is disposed within the casing 7 and **comprises an annular heat sink 15 fitted to the shaft 10** in such a way as to be in contact with one end of the tubular cylindrical body 11, and **a blower outlet 16 acting to direct a stream of air onto the annular heat sink 15** to dissipate the excess heat.
>
> **The annular heat sink 15**, in particular, is **constituted by a hub 16 fitted on the shaft 10 and** by a **plurality of fins 18 coaxial** with the axis A which extend from the surface of the hub 17 parallel to and facing one another, whilst the **blower outlet 16 is constituted by a calibrated nozzle extending from the casing 7 above the annular fins 18 in such a way that the air stream from it flows over the entire height of the annular fins 18.**
>
> **Preferably, but not necessarily, the calibrated nozzle 16 is connected to the source of air under pressure 4 in such a way as to utilise, for cooling the rotor 5 and the stator 6** the same air under pressure as is normally utilised to control the release device of the chuck 3. Obviously, the casing 7 is provided with one or more pressure relief openings 19 through which the air can escape after having passed over the annular fins 18 thereby cooling them.

Selci '123 Patent, col. 2 line 53 - col 3, line 10 (emphasis added).

As amended, claim 1 recites, *inter alia*, "a jet impingement device operable for exposing the end-winding to a temperature controlled stream of fluid, the jet impingement device including a jet nozzle oriented to direct the temperature controlled stream onto an exterior surface of the end-winding." As discussed above, Selci teaches that an annular heat sink 15 is affixed interior to a rotor 5. Selci also teaches cooling the rotor 5 and the stator 6 by "a blower outlet 16 ... constituted by a calibrated nozzle extending from the casing 7 above the annular fins 18 in such a way that the air stream from it flows over the entire height of the annular fins 18" (*Selci '123 Patent*, col. 2 line 59 - col. 3 line 2) of an "annular heat sink 15." Hence, Selci does not disclose or suggest "a jet impingement device *operable for exposing the end-winding to a temperature controlled stream of fluid, the jet impingement device including a jet nozzle oriented to direct the temperature controlled stream onto an exterior surface of the end-winding*" as recited in claim 1.

Further, Selci is directed toward a chuck for gripping and releasing rotating tools. The annular heat sink 15 of Selci, onto which air is directed, is interposed between the rotating tool 20 grasped within chuck 3 and the rotor 5 of electric motor 2. In describing the problem which his invention was intended to solve, Selci stated that "the parameter which strongly influences the power which can be delivered by the electric motor of the electric chuck is the

maximum quantity of heat which can be dissipated per unit of time from the rotor, this latter being in fact the element of the electric motor which has the greatest difficulty in dissipating the heat produced." *Selci '123 Patent*, col. 1 lines 38-43. Accordingly, there is no suggestion in the art to modify the teachings of Selci to expose "*the end-winding to a temperature controlled stream of fluid, the jet impingement device including a jet nozzle oriented to direct the temperature controlled stream onto an exterior surface of the end-winding*" as recited in claim 1.

Insofar as Selci neither teaches nor suggests the recitations of claim 1, Applicants request that the Examiner allow claim 1 over Selci. In addition, insofar as that claims 2-7 depend from claim 1, claims 2-7 are allowable for at least the reasons why claim 1 is allowable. Accordingly, Applicants request that the Examiner also allow those claims over Selci.

Claim 8 has been amended herein to recite "delivering a jet stream of the temperature controlled fluid from the inlet to the end-winding such that heat is transferred between the surface of the end-winding and the jet stream of fluid impinging the surface of the end-winding." As to noted above, Selci does not teach a "temperature controlled fluid." Thus, Selci does not disclose or suggest a "jet stream of the temperature controlled fluid ... impinging the surface of the end-winding." Accordingly, Selci does not disclose or suggest "delivering a jet stream of the temperature controlled fluid from the inlet to the end-winding such that heat is transferred between the surface of the end-winding and the jet stream of fluid impinging the surface of the end-winding" as recited in claim 8.

Further, as discussed above, Selci is concerned with annular heat sink 15 interposed between rotating tool 20 and rotor 5 of electric motor 2. Accordingly, there is no suggestion in the art to redirect the air stream from annular heat sink 15 to windings 9 of stator 6. In addition, as also discussed above, Selci is concerned with a chuck 3 gripping a rotating tool 20. Accordingly, it is unlikely that one having ordinary skill in the art would be motivated to add a cooling and/or temperature control system to Selci so as to reach the "temperature controlled fluid" related recitations of claim 8.

Insofar as Selci neither teaches nor suggests the recitations of claim 8, Applicants request that Examiner allow claim 8 over Selci. In addition, insofar as that claims 9-11 depend from claim 8, claims 9-11 are allowable for at least the reasons why claim 8 is allowable. Accordingly, Applicants request that the Examiner also allow those claims over Selci.

Claim 12 has been amended herein to recite "a jet impingement device operable for exposing the end-winding to a temperature controlled jet stream of fluid." As discussed above, Selci does not show "a temperature controlled jet stream of fluid." Accordingly, Selci does not disclose or suggest "a jet impingement device operable for exposing the end-winding to a temperature controlled jet stream of fluid." Accordingly, Selci does not disclose or suggest "a jet impingement device operable for exposing the end-winding to a temperature controlled jet stream of fluid" as recited in claim 12.

As discussed above, Selci is concerned with annular heat sink 15 interposed between rotating tool 20 and rotor 5 of electric motor 2. Accordingly, there is no suggestion in the art to redirect the air stream from annular heat sink 15 to windings 9 of stator 6. In addition, as is also discussed above, Selci is concerned with a chuck 3 gripping a rotating tool 20. Accordingly, it is unlikely that one having ordinary skill in the art would be motivated to add a cooling and/or temperature control system to Selci so as to reach the "temperature controlled jet stream of fluid" and related recitations of claim 12.

Insofar as Selci neither teaches nor suggests the recitations of claim 12, Applicants request that Examiner allow claim 12 over Selci. In addition, insofar as that claims 13-18 depend from claim 12, claims 13-18 are allowable for at least the reasons why claim 12 is allowable. Accordingly, Applicants request that the Examiner also allow those claims over Selci.

II. 35 U.S.C. § 102 Rejections Based on the Snuttjer '569 Patent

Claims 1, 8, and 12 were rejected under 35 U.S.C. § 102(b) as being anticipated by Snuttjer (U.S. Patent No. 4,959,569). *Examiner's Office Action* p. 5 (10 Dec. 2002).

Snuttjer is directed toward providing a stator coil water system leakage monitor which is capable of alerting an operator to relatively small leakages within the system. Fig. 1 of Snuttjer is instructive:

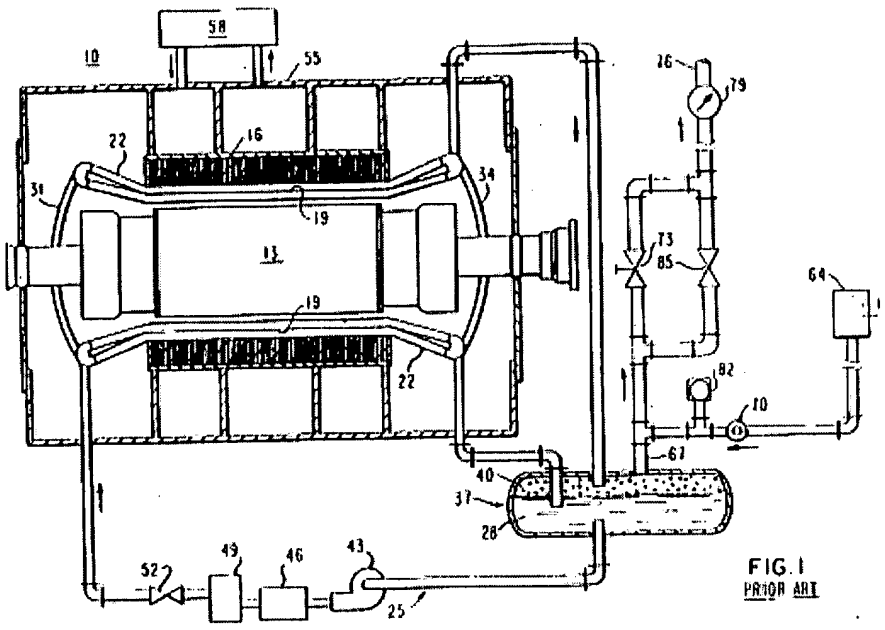


FIG. 1
PRIOR ART

Referring now to the drawings in detail, FIG. 1 ....

The stator windings 19 are cooled by a stator coil cooling system 25 as shown in the figure. A liquid coolant 28, generally water, is introduced to the stator coil windings 19 through an inlet header 31 at one end of the stator 16 and flows through the stator windings 19 to exit therefrom at an outlet header 34. The water 28 then flows into a holding tank 37, wherein any gas 40 within the water 28 is separated out. Water 28 then flows from the holding tank 37 to, for example, a pump 43 and is typically passed through a heat exchanger 46 and one or more filters 49 or valves 52, before it is returned again to the inlet header 31. Additionally the generator 10, disposed within a gas-tight housing 55, is cooled by a gaseous coolant system 58, such as a hydrogen circulation system. The gas coolant 40 is circulated through the housing 55 to maintain the interior thereof and the generator 10 at an optimum operating temperature.

Snuttjer '569 Patent, col. 3 lines 16-42.

Claim 1, as amended herein, currently recites "a jet impingement device operable for exposing the end-winding to a temperature controlled stream of fluid, said jet impingement device including a jet nozzle oriented to direct the temperature controlled stream onto an exterior surface of the end winding." Claim 8, as amended herein, recites "delivering a jet stream of the temperature controlled fluid from the inlet to the end-winding such that heat is transferred between the surface of the end-winding and the jet stream of fluid impinging the surface of the

end-winding." Claim 12, as amended herein, recites "a jet impingement device operable for exposing the end-winding to a temperature controlled jet stream of fluid."

As noted above, Snuttjer teaches "[a] liquid coolant 28, generally water, is introduced to the stator coil windings 19 through an inlet header 31 at one end of the stator 16 and flows through the stator windings 19 to exit therefrom at an outlet header 34." *Snuttjer '569 Patent*, col. 3 lines 37-31. Consequently, Snuttjer has no teachings whatsoever related to the foregoing "jet" oriented recitations of independent claims 1, 8, and 12 and hence does not anticipate those claims.

As discussed above, Snuttjer teaches a cooling system flowing through a series of closed pipes. There is no suggestion in the art to modify the teachings of Snutter to reach the recitations of claims 1, 8, and 12, as amended herein, nor can there be. In order to modify Snuttjer to even approach the "jet" related recitations of claims 1, 8, and 12, as amended herein, the closed circulatory system of Snuttjer would have to be opened. Under the MPEP guidelines, such a teaching could not occur in that it would change the principle of operation of Snuttjer. *See MPEP* § 2143.01. Specifically, if the closed circulatory system of Snuttjer were opened, the coolant would no longer be "introduced to the stator coil windings 19 through an inlet header 31 at one end of the stator 16 and flows through the stator windings 19 to exit therefrom at an outlet header 34." Accordingly, not only is there no teaching to modify Snuttjer in the art, there cannot be such a teaching under the MPEP guidelines.

Insofar as Snuttjer neither teaches nor suggests the recitations of claims 1, 8, and 12, Applicants request that Examiner allow claims 1, 8, and 12 over Snuttjer. In addition, insofar as that all remaining claims depend either directly or indirectly from claims 1, 8, and 12, all remaining claims are allowable for at least the reasons why claims 1, 8, and 12 are allowable. Accordingly, Applicants request that the Examiner also allow those claims over Snuttjer.

III. Conclusion

Overall, the cited references do not singly, or in any motivated combination and/or modification, teach or suggest the claimed features of the embodiments recited in independent claims 1, 8, and 12, and thus such claims are allowable. Because the remaining claims depend from allowable independent claims, and also because they include additional recitations, such claims are likewise allowable. If the undersigned attorney has overlooked a

relevant teaching in any of the references, the Examiner is requested to point out specifically where such teaching may be found.

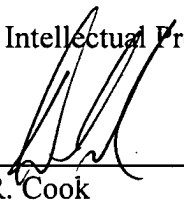
In light of the above amendments and remarks, Applicants respectfully submit that all pending claims are allowable. Applicants, therefore, respectfully request that the Examiner reconsider this application and timely allow all pending claims. The Examiner is encouraged to contact Mr. Cook by telephone to discuss the above and any other distinctions between the claims and the applied references, if desired. If the Examiner notes any informalities in the claims, he is encouraged to contact Mr. Cook by telephone to expediently correct such informalities.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version With Markings to Show Changes Made**." If a conflict arises between the clean copy and the attached "version with markings to show changes made," this statement constitutes public notice that Applicants respectfully request that its intent is that the version with markings to show changes made be considered controlling.

Respectfully submitted,

Kanghua Chen et al.

SEED Intellectual Property Law Group PLLC



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Claims 1, 8 and 12 have been amended as follows:

1. (Amended) An electric motor cooling assembly, comprising:

a housing;

a stator disposed within the housing, the stator operable for generating a magnetic field;

a rotor disposed within the housing, the rotor operable for receiving the magnetic field and generating a torque;

a winding operatively connected to the stator;

an end-winding integrally formed with the winding;

a jet impingement device operable for exposing the end-winding to a temperature controlled stream of fluid, the jet impingement device including a jet nozzle oriented to direct the temperature controlled stream onto an exterior surface of the end--winding.

8. (Amended) A method for transferring heat between a stream of fluid impinging ~~the~~ a surface of an electric motor end-winding ~~and~~ of an electric motor ~~end winding~~, comprising:

controlling the temperature of a volume of fluid;

establishing a stream of fluid from the volume of fluid to an inlet;

delivering a jet stream of the temperature controlled fluid from the inlet to the end-winding such that heat is transferred between the surface of the end-winding and the jet stream of fluid impinging the surface of the end-winding; and

removing fluid from the electric motor via an outlet.

12. (Amended) An electric motor, comprising:

a housing;

a stator disposed within the housing, the stator operable for generating a magnetic field;

a rotor disposed within the housing, the rotor operable for receiving the magnetic field and generating a torque;

a winding operatively connected to the stator;

an end-winding comprising the ends of the stator winding, integrally formed with the stator winding;

a jet impingement device operable for exposing the end-winding to a temperature controlled jet stream of fluid.

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